

4240-134

(Claim 8 was not included by examiner in (B) but recites **“a method for producing a *spike antigen protein or a nucleocapsid antigen protein...*”(emphasis added)** so claim 8 is included in the election in (B).)

Furthermore, applicants respectfully submit that:

The election in (A) of a specific “pgs” gene is specifically encompassed in the subject matter of claims 1, 4, and 5.

The election in (B) of the spike antigen protein is specifically encompassed in the subject matter of claims 1, 2, 4, 8, 9, and 15.

The election in (B)(i) is specifically encompassed in the subject matter of claims 2 and 4.

The election in (C) is specifically encompassed in the subject matter of claim 7 and 14-16.

Traversal of Species Election Requirement

The above elections of species is made by applicants with traverse. The examiner's attention is respectfully directed to MPEP § 1850, PCT Rule 13.2 which forms the basis for applicants' traversal and states:

“[w]here a group of inventions is claimed in one and the same international application, the requirement of unity of invention referred to in Rule 13.1 shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression ‘special technical features’ shall mean those **technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.**” (emphasis added)

The restriction is traversed under the above Rule 13.2 as there is a technical relationship among the groups (A), (B), and (C) which involves the same special technical feature. Additionally, among the species included in each group (A), (B), and (C) there exist common special technical features which define the contribution the claimed species make over the prior art.

The common special technical feature among the groups (A), (B), and (C) is a surface expression vector expressing antigens of the SARS coronavirus. The surface expression vector is a recited element of each of claims 1-6 from which all additional claims directly or indirectly

4240-134

depend. This common special technical feature links groups (A), (B), and (C) and defines a contribution (the recited surface expression vector) which these groups make over the prior art.

Independent claim 1 recites "a surface expression vector comprising any one or two or more of the genes pgsA, pgsB, and pgsC..." Claim 6, dependent from claim 1, recites a "microorganism transformed by the expression vector." Claim 9, indirectly dependent from claim 1, recites a vaccine comprising a protein "produced by the method of claim 8," which recites "culturing the microorganism of claim 6," which is transformed by the expression vector of any of claims 1 to 5. Furthermore, claim 15 is directed to a bacterium "produced by the method of claim 14," which depends directly from claim 8 and indirectly from any of claims 1 to 5. Therefore, a surface expression vector expressing antigens of the SARS coronavirus or use thereof is a special technical feature of all of the claims, which defines the contribution that the claimed invention considered as a whole, makes over the prior art. As such, all claims of the application possess unity of invention.

Additionally, each of the species identified as group (A), (B), or (C) contains members which possess common special technical features which define the characteristics of the claimed species over the prior art, such that each group possesses unity of invention.

In group (A), the common special technical feature of pgsA, pgsB, and pgsC is that all of these genes encode poly-gamma-glutamic acid, specifically a portion of the poly-gamma-glutamic-acid synthase complex (see specification, page 6, lines 22-26).

Within group (B), the common special technical feature of the species is that all of the antigen proteins are derived from the spike protein of the SARS virus. As specifically discussed at page 6 of the specification, the expression vector of the invention contains a surface antigen protein gene expressed on its surface and "any gene encoding a spike antigen protein of SARS coronavirus can be used." The homologous origin of all of the antigen proteins is the common special technical feature linking these species over the prior art.

In group (C), the group of listed microorganisms is a group that exhibits no toxicity upon application to a living body, or any attenuated microorganism. A member of the group of microorganisms identified in group (C) may be gram positive (examples in the specification and claims include *Bacillus*, lactic acid bacterium, *Lactobacillus*, *Lactococcus*, *Staphylococcus*,

4240-134

Listeria monocytogenes, *Streptococcus*, "and the like") or gram negative (examples in the specification and claims include *E. coli*, *Salmonella typhi*, *Salmonella typhimurium*, *Vibrio cholerae*, *Mycobacterium bovis*, *Shigella*, "and the like") and will not show toxicity upon application. This common characteristic is detailed in the specification at page 7, lines 8-15. Thus, in group (C) the common special technical feature among the listed species is that all of the microorganisms do not show toxicity upon application to a living body, or any attenuated microorganism.

Therefore for the foregoing reasons, under PCT Rule 13.2 and the unity of invention standard, there is a common special technical relationship among the groups (A), (B), and (C), and there exists a common special technical relationship amongst each of the species of group (A), the species of group (B) and the species of group (C). Accordingly, under Rule 13.2, as there are common special technical features, unity of invention is present and the restriction requirement should be withdrawn.

However, in order to be fully responsive to the office action mailed August 22, 2007, applicants provisionally elect, with traverse,

(A) *pgsA* in claim 1;

(B) spike antigen protein in claims 1, 8, 9, 15, and SARS SC in claim 2; and

(C) lactic acid bacterium in claim 7.

Additionally, it is understood that in a species election, if any species is found to be allowable, that an additional species will be examined, until all species have been examined, *i.e.* all *pgs* genes, all antigen proteins and all microorganisms. If any generic claim is finally held to be allowable, all claims drawn to species containing all elements of the generic claim will also generally be held to be allowable. (MPEP § 806.04(d)).

Applicability of Elections

On page 3 of the Office Action mailed August 22, 2007, the examiner classifies the generic claims of the application as claim 1, with respect to a *pgs* claim; claims 1-3, 9 and 15 with respect to a specific antigen protein; claim 7 with respect to a specific microorganism; and

4240-134

"all claims are generic." Applicants respectfully disagree. Applicant respectfully directs the examiner's attention to MPEP 806.04(d), Definition of a Generic Claim. In pertinent part, "a generic claim should ***require** no material element additional to those ****required** by the species claims, and **** each of the species claims must require all the limitations of the generic claim.**"

With regard to the recited element of the claims of a specific pgs gene, it is respectfully submitted that claim 1 is a generic claim, reciting pgs A, pgsB and pgsC. Only claims 4 and 5 require specific pgs genes (each claim reciting vectors containing pgsA). The examiner states in the Office Action mailed August 2, 2007, on page 3, line 4 that "A. Claim 1 requires a specific "pgs" gene, **all other claims are generic.**" (emphasis added) In fact, claim 1 is a generic claim.

With regard to the recited element of the antigen protein, claim 1 contains both the "spike antigen protein" and the "nucleocapsid antigen protein," which fulfills the above definition for a generic claim by **"requiring no material element additional to those required by the species claims."** Claims 2 and 3, however, contain either the "spike antigen protein" (claim 2) or the "nucleocapsid antigen protein" (claim 3). As claims 2 and 3 only contain one or the other of the limitations recited in claim 1, applicants respectfully submit that claim 1 is a generic claim and claims 2 and 3 are species claims to that generic claim. However, with respect to specific spike antigen proteins and specific nucleocapsid proteins, claims 2 and 3 are generic claims and claims 4 and 5 are species claims to those generic claims. Claims 4 and 5 recite vectors containing specific antigen proteins, as set forth in claim 1. Claim 4 recites "[t]he surface expression vector according to claim 2..." By dependency from claim 2, claim 4 is limited to the recited spike antigen proteins of claim 2. Claim 5 recites "[t]he surface expression vector according to claim 3..." By dependency from claim 3, claim 5 is limited to the recited nucleocapsid antigen proteins of claim 3. As claims 4 and 5 contain only single limitations of claims 2 and 3, respectively, by the above definition, claim 4 and 5 are species claims. On page 3 of the Office Action mailed August 22, 2007, the examiner states that "B. Claims 1-3, 9 and 15 require a specific antigen protein, **all other claims are generic.**" (emphasis added) Applicants respectfully disagree and submit that claims 1-3, 9 and 15 are generic claims.

On page three of the Office Action mailed August 22, 2007, line 6, the examiner states "C. Claim 7 requires a specific microorganism, **all other claims are generic.**" (emphasis added) Similarly to the arguments presented above, applicants respectfully submit that claim 7 is a

SEP 24 2007

4240-134


generic claim. See above paragraphs for definition of generic and species claim as well as examples of the other claims meeting this definition. Claim 7 recites a group of microorganisms, from which a specific microorganism might be selected. Claims dependent therefrom do not provide any additional microorganisms. As such, claim 7 is a generic claim.

CONCLUSION

Based on the foregoing, it is requested that the restriction requirement be reconsidered and withdrawn, and the applicants respectfully request that pending claims 1-19 are unitarily examined. Also, applicant hereby reserves the right to disavow the foregoing traversal of election/restriction at a later date to preserve rights to file additional continuation applications and/or requests for continued examination if various claim groups of the instant application should be properly demonstrated to be patentably distinct.

If there are any issues that can be telephonically resolved, the examiner is requested to contact the undersigned attorney at (919) 419-9350 to discuss same, in order to expedite the prosecution of the present application.

Respectfully submitted,


Kelly K. Reynolds
Reg. No. 51,154
Attorney for Applicants

INTELLECTUAL PROPERTY/
TECHNOLOGY LAW
Phone: (919) 419-9350
Fax: (919) 419-9354
Attorney File No.: 4240-134

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